

**AGENDA**  
**Satellite Observations of the Global Water Cycle**  
**March 7-9, 2007**  
**Beckman Center of the National Academies, Irvine, CA**

**Wednesday, March 7, 2006**

07:30-08:30 Breakfast

08:30-08:45 Opening Remarks

Jay Famiglietti, UCI, Logistics, Welcome on behalf of UCI

Randy Friedl, JPL, Welcome on behalf of JPL

Eni Njoku, JPL, Workshop goals

08:45-09:15 Rick Anthes, UCAR, Earth Science and Applications from Space: A Community Assessment and Strategy for the Future

**Session 1: The Global Water Budget, Adam Schlosser, Chair; Sean Swenson, Rapporteur**

09:15-09:45 Kevin Trenberth, NCAR, Global water budget estimates and uncertainties

09:45-10:00 Don Chambers, UT Austin, Measuring Variations in Mean Ocean Mass

10:00-10:15 Eric Rignot, JPL, Cryospheric changes and uncertainties

10:15-11:00 Poster viewing and coffee break

**GWB1**

G. R. Brakenridge, E. Anderson, S. V. Nghiem, T. De Groot, and Z. Kugler  
Microwave Sensing of Global River Runoff

**GWB2**

S. V. Nghiem, et al.  
Global Observations of Land Surface Water with Satellite Active and Passive Microwave Sensors

**GWB3**

K-W. Seo, D. E. Waliser, and B. Tian  
Evaluation of global fresh water discharge from land to oceans using multi-remote sensors

**GWB4**

J. Benveniste and P. Berry  
Global monitoring of inland surface water using multi-mission satellite radar altimetry

**GWB5**

I. Velicogna and J Wahr  
Ice sheets contribution to the global water budget

**GWB6**

J. Famiglietti, D. Chambers, I. Velicogna, F. Frappart, S. Nerem and M. Rodell  
Mass changes in Earth's global water reservoirs from GRACE,

**GWB7**

T. Syed, J. Famiglietti, V. Zlotnicki and M. Rodell  
Estimates of freshwater discharge from GRACE

**GWB8**

C.K. Shum, Hyongki Lee, Yuchan Yi, and Tinjin Zhang  
Study of Permafrost Mass Changes Using GRACE and Satellite Altimetry

**GWB9**

W. Timothy Liu and Xiaosu Xie

Spacebased estimation of moisture transport in oceanic and continental water balance

**GWB10**

P. Houser and J. Entin

The NASA Energy and Water Cycle Study

**GWB11**

J. Roads

GEWEX Water and Energy Budget Studies

**GWB12**

C. A. Schlosser and NASA Energy and Water-cycle Study (NEWS) Water-Budget Integration Team

The NASA Energy and Water-Cycle Study (NEWS) Global Water-Budget Synthesis

11:00-12:00 Discussion

12:00-13:30 Lunch break (lunch served from 12:00 to 13:00)

**Session 2: Atmospheric Hydrometeorology, Phil Arkin, Chair; Steve Margulis, Rapporteur**

13:30-14:00 Chris Kummerow, CSU, Observing Global Precipitation - TRMM, GPM and beyond

14:00-14:15 Graeme Stephens, CSU, New insights on the hydrological cycle of Earth: Early results from Cloudsat

14:15-14:30 David Noone, University of Colorado, Assessment and long-term monitoring of the hydrologic cycle with space-based isotope observations

14:30-14:45 Poster introductions

14:45-16:00 Coffee and poster viewing

**AH1**

R. Adler, G. Gu, and G. Huffman

Variations in Global and Regional Precipitation Over the Last 28 Years.

**AH2**

F. Ishak-Boushaki, K. Hsu, and S. Sorooshian

An Approach to Integrate Satellite- and Ground-based Precipitation Measurements for Hydrologic Forecasting

**AH3**

A. Behrangi, K. Hsu, and S. Sorooshian

A Bi-Spectral Algorithm for Day-time Precipitation Detection

**AH4**

L. Shi and J. J. Bates

Intersatellite calibrated long-term time series of the upper tropospheric water vapor

**AH5**

D. Waliser, F. Li, C. Woods, J. Jiang, A. Tomkins, D. Vane, G. Stephens, J. Bacmeister, and J. Chern

Cloud Ice Water: New Observations and Modeling Challenges

**AH6**

N. J. Livesey, J. W. Waters, M. L. Santee, and P. C. Stek

The Scanning Microwave Limb Sounder (SMLS) instrument concept

**AH7**

D. Noone, J. Worden, K. Bowman, and D. Brown

Assessment and long-term monitoring of the hydrologic cycle with space-based isotope observations

16:00-17:00 Discussion

18:00-21:00 Reception, Hyatt Regency Newport Beach, Bay Pool 1

## Thursday, March 8, 2006

07:30-08:30 Breakfast

### Session 3: Terrestrial Hydrology, Christa Peters-Lidard, Chair; Wade Crow, Rapporteur

08:30-09:00 Eric Wood, Princeton, Using remote sensing for continental-scale water budget studies  
09:00-09:15 Jay Famiglietti, UC Irvine, Hydroclimatology of Terrestrial Water Storage from GRACE  
09:15-09:30 Matt Rodell, NASA/GSFC, Mapping Terrestrial Evapotranspiration at Regional to Global Scales  
09:30-09:45 Poster introductions  
09:45-11:00 Coffee and poster viewing

#### TH1

D. Alsdorf, E. Rodriguez, and D. Lettenmaier  
Measuring Surface Water From Space

#### TH2

B. M. Fekete, D. M. Bjerklie, C. Birkett, R. Braswell, and C. J. Vörösmarty  
Surveying and Monitoring River Systems Using Satellite Remote Sensing: A theoretical basis for the instrument requirements with special focus on the emerging wide swath altimeters

#### TH3

P. Kosuth, N. Bercher, and V. Frontera  
Actual accuracy of Satellite radar altimetry measurement of inland water levels : still over one meter for large rivers

#### TH4

N. Mognard, M. Grippa, S. Biancamaria, and T. Le Toan  
Variability of Surface Water Extent in Central Siberia During the 1988 to 2003 Summers

#### TH5

B. Kiel, D. Alsdorf, and T. Pavelsky  
Along Stream Profiles of Ohio River Discharge from Satellite Elevation Mapping

#### TH6

J. Hamski, D. Alsdorf, T. Pavelsky, and G. LeFavour  
Estimating Water Slope in Amazon River Tributaries Using the Shuttle Radar Topography Mission Digital Elevation Model

#### TH7

D. Alsdorf, P. Bates, J. Melack, M. Wilson, and T. Dunne  
Spatial and Temporal Dynamics of the Amazon Flood Wave

#### TH8

H. Lee, C.K. Shum, Y. Yi, M. Ibaraki, and F. Schwartz  
Decadal Louisiana Wetland Water Level Change from Retracked TOPEX Radar Altimetry

#### TH9

Y.H. Kerr, P. Waldteufel, and A Hahne  
The SMOS Mission Current status

#### TH10

J. Shi  
Soil Moisture Estimation with AMSR-E

#### TH11

I. J. Davenport, M. J. Tribbeck, and R. J. Gurney  
Passive microwave soil moisture retrieval errors arising from scene heterogeneity

**TH12**

O. Merlin, J. Walker, R. Panciera, J. Kalma, E. Kim, and J. Hacker  
The National Airborne Field Experiments: Towards 1 km Resolution Soil Moisture

**TH13**

Y. Chen, C.K. Shum, D. Alsdorf, and B. Schaffrin  
Regional Hydrologic Signal Recovery Using GRACE Line-Of-Sight Gravity Difference Observations

**TH14**

M. Rodell, J. Famiglietti, H. Kato, B. Zaitchik, and L. Gulden  
Estimating Seasonal to Interannual Groundwater Variability Using GRACE

**TH15**

S. Swenson and J. Wahr  
Monitoring human impacts on the water cycle

**TH16**

J. Dozier, J. E. Frew, and T. H. Painter  
Space-Time Series of MODIS Snow Cover Products

**TH17**

N. Molotch, M. Durand, and S. Margulis  
Merging complementary remote sensing datasets in the context of snow water equivalent reconstruction

11:00-12:00 Discussion

12:00-13:30 Lunch break (lunch served from 1200 to 1300)

**Session 4: Prediction Challenges, Robert Gurney, Chair; Jeffrey Walker, Rapporteur**

13:30-14:00 Louis Uccellini, NWS/NCE, Prediction and Assimilation Challenges for Hydrometeorological Operational Applications: An NCEP Perspective

14:00-14:15 Matthias Drusch, ECMWF

14:15-14:30 Soroosh Sorooshian, UC Irvine, Hydrometeorological prediction requirements

14:30-14:45 Poster introductions

14:45-16:00 Coffee and poster viewing

**PC1**

M.F. McCabe and E.F. Wood  
Identifying hydrological feedback and consistency through multi-sensor observation of the water cycle

**PC2**

J Schaake  
The Hydrologic Ensemble Prediction Experiment (HEPEX)

**PC3**

R. Reichle  
Land data assimilation in the NASA/GMAO system

**PC4**

S. Lee, James McPhee, B. Forman, and S. Margulis  
Estimation of high-resolution ensemble surface forcing fields using a multi-scale remote sensing data assimilation approach

**PC5**

R. Pipunic, J. Walker, C. Trudinger, and A. Western  
Heat Flux Data Assimilation for Improved Land Surface Modelling – A One-Dimensional Field Data Case Study

**PC6**

M. J. Tribbeck and R. J. Gurney  
Snow-SVAT Modelling as a Diagnostic Tool

**PC7**

M. Durand and S.. Margulis  
Issues of scale in evaluating the feasibility of snow water equivalent estimation via radiance assimilation

**PC8**

K. Andreadis, E. Clark, D. Lettenmaier, and D. Alsdorf  
Prospects for river discharge and depth estimation through assimilation of swath-altimetry into a raster-based hydraulics model

**PC9**

M. Thyer and J. Walker  
A Bayesian approach to characterizing uncertainty in remotely sensed soil moisture measurements using the NAFE dataset

**PC10**

R. Panciera, J. P. Walker, J. D. Kalma, and E. J.Kim  
Scaling properties of passive microwave soil moisture signatures during NAFE'05

**PC11**

R. H. Reichle, R. D. Koster, P. Liu, S. P. P. Mahanama, E. G. Njoku, and M. Owe  
Comparison and assimilation of global soil moisture retrievals from AMSR-E and SMMR

**PC12**

D. Ryu, W. T. Crow, and X. Zhan  
Assimilation of Coarse-Scale Satellite Soil Moisture Observations into a Fine-Scale Hydrologic Model

**PC13**

C. Draper, P. Steinle, and J. Walker  
Soil Moisture Data in NWP

**PC14**

C. D. Peters-Lidard, D. M. Mocko, J. A. Santanello, Jr., M. A. Tischler, M. S. Moran, M.Garcia, and Y. Wu  
The role of precipitation uncertainty for soil property estimation using soil moisture retrievals in a semi-arid environment

**PC15**

M. Hui Lo, P. J.-F. Yeh, and J. S. Famiglietti  
Impact of Water Table Dynamics on Hydrological Simulation of the NCAR CLM

**PC16**

G. Goteti, J. Famiglietti, K. Asante, G. Niu and Z-L. Yang, A Catchment-based hydrology and routing model system (CHARMS)

16:00-17:00 Discussion

TBD Dinner, Cost TBD, Caspian Restaurant (Persian), 14100 Culver Dr, Irvine, 92604, (949) 651-8454

## **Friday, March 9, 2006**

07:30-08:30 Breakfast

### **Session 5: An Integrated Framework for Global Water Cycle Observation and Assessment, Peter van Oevelen, Chair; Matt McCabe, Rapporteur**

08:30-09:00 Taikan Oki, University of Tokyo, Current and Future Perspectives on World Water Resource

09:00-09:15 Paul Houser, GMU, Water Cycle Data Integration, Assimilation & Utilization

09:15-09:30 Dennis Lettenmaier, U. Washington

09:30-09:45 Poster introductions

09:45-11:00 Coffee and poster viewing

**IF1**

W. Crow, J. Bolten, and X. Zhan

Exploiting Potential Synergies Between Spaceborne Rainfall and Surface Soil Moisture Retrievals

**IF2**

P. Houser, D. Belvedere, B. Imam, R. Schiffer, C.A. Schlosser, H. Gupta, C. Welty, C. Vorosmarty, D. Matthews, and R. Lawford

WaterNet: The NASA Water Cycle Solutions Network

11:00-12:00 Discussion

12:00-13:30 Lunch break (lunch served from 1200 to 1300)

**Session 6: Implications of the Decadal Survey, Jay Famiglietti, Eni Njoku, Duane Waliser, Chairs**

13:30-14:00 Dennis Lettenmaier, U. Washington

14:00-14:30 Dara Entekhabi, MIT

14:30-15:30 Discussion on implications of the survey for global water cycle science TBD

15:30-15:45 Coffee break

15:45-16:30 Wrap-up and next steps

16:30 Adjourn